

generally along a longitudinal axis and includes an entry portion and a distribution outlet in fluid communication with the entry portion. The entry portion is in fluid communication with the first and second feed inlets of the feed conduit. The distribution outlet extends a predetermined distance along a transverse axis. The transverse axis is substantially perpendicular to the longitudinal axis. The first and second feed inlets each has an opening with a cross-sectional area. The entry portion of the distribution conduit has an opening with a cross-sectional area which is greater than the sum of the cross-sectional areas of the openings of the first and second feed inlets.

In other embodiments, a slurry distributor includes a feed conduit, a distribution conduit, and at least one support segment. The feed conduit includes a first entry segment with a first feed inlet and a second entry segment with a second feed inlet disposed in spaced relationship to the first feed inlet. The distribution conduit extends generally along a longitudinal axis and includes an entry portion and a distribution outlet in fluid communication with the entry portion. The entry portion is in fluid communication with the first and second feed inlets of the feed conduit. Each support segment is movable over a range of travel such that the support segment is in a range of positions over which the support segment is in increasing compressive engagement with a portion of at least one of the feed conduit and the distribution conduit.

In another aspect of the present disclosure, a slurry distributor can be placed in fluid communication with a gypsum slurry mixer adapted to agitate water and calcined gypsum to form an aqueous calcined gypsum slurry. In one embodiment, the disclosure describes a gypsum slurry mixing and dispensing assembly which includes a gypsum slurry mixer adapted to agitate water and calcined gypsum to form an aqueous calcined gypsum slurry. A slurry distributor is in fluid communication with the gypsum slurry mixer and is adapted to receive a first flow and a second flow of aqueous calcined gypsum slurry from the gypsum slurry mixer and distribute the first and second flows of aqueous calcined gypsum slurry onto an advancing web.

The slurry distributor includes a first feed inlet adapted to receive the first flow of aqueous calcined gypsum slurry from the gypsum slurry mixer, a second feed inlet adapted to receive the second flow of aqueous calcined gypsum slurry from the gypsum slurry mixer, and a distribution outlet in fluid communication with both the first and the second feed inlets and adapted such that the first and second flows of aqueous calcined gypsum slurry discharge from the slurry distributor through the distribution outlet.

In another embodiment, a slurry distributor includes a feed conduit and a distribution conduit. The feed conduit includes an entry segment with a feed inlet and a feed entry outlet in fluid communication with the feed inlet. The entry segment extends along a first feed flow axis. The feed conduit includes a shaped duct having a bulb portion in fluid communication with the feed entry outlet of the entry segment. The feed conduit includes a transition segment in fluid communication with the bulb portion. The transition segment extends along a second feed flow axis, which is in non-parallel relationship with the first feed flow axis.

The distribution conduit extends generally along a longitudinal axis and includes an entry portion and a distribution outlet in fluid communication with the entry portion. The entry portion is in fluid communication with the feed inlet of the feed conduit. The distribution outlet extends a predetermined distance along a transverse axis, which is substantially perpendicular to the longitudinal axis.

The bulb portion has an area of expansion with a cross-sectional flow area that is greater than a cross-sectional flow area of an adjacent area upstream from the area of expansion relative to a flow direction from the feed inlet toward the distribution outlet distribution conduit. The shaped duct has a convex interior surface in confronting relationship with the feed entry outlet of the entry segment.

In still another embodiment, a slurry distributor includes a bifurcated feed conduit and a distribution conduit. The bifurcated feed conduit includes a first and a second feed portion each having an entry segment with a feed inlet and a feed entry outlet in fluid communication with the feed inlet, a shaped duct having a bulb portion in fluid communication with the feed entry outlet of the entry segment, and a transition segment in fluid communication with the bulb portion. The entry segment extends generally along a vertical axis. The transition segment extends along a longitudinal axis, which perpendicular to the vertical axis.

The distribution conduit extends generally along the longitudinal axis and includes an entry portion and a distribution outlet in fluid communication with the entry portion. The entry portion is in fluid communication with the first and second feed inlets of the feed conduit. The distribution outlet extends a predetermined distance along a transverse axis, which is substantially perpendicular to the longitudinal axis.

The first and second bulb portions each has an area of expansion with a cross-sectional flow area that is greater than a cross-sectional flow area of an adjacent area upstream from the area of expansion relative to a flow direction from the respective first and second feed inlets toward the distribution outlet distribution conduit. The first and second shaped ducts each has a convex interior surface in confronting relationship with the respective first and second feed entry outlets of the first and second entry segments.

In another embodiment, a slurry distributor includes a distribution conduit and a slurry wiping mechanism. The distribution conduit extends generally along a longitudinal axis, a distribution outlet in fluid communication with the entry portion, and a bottom surface extending between the entry portion and the distribution outlet. The distribution outlet extends a predetermined distance along a transverse axis, which is substantially perpendicular to the longitudinal axis. The slurry wiping mechanism includes a movable wiper blade in contacting relationship with the bottom surface of the distribution conduit. The wiper blade is reciprocally movable over a clearing path between a first position and a second position. The clearing path is disposed adjacent the distribution outlet.

In still another embodiment, a slurry distributor includes a distribution conduit and a profiling mechanism. The distribution conduit extends generally along a longitudinal axis and includes an entry portion and a distribution outlet in fluid communication with the entry portion. The distribution outlet extends a predetermined distance along a transverse axis, which is substantially perpendicular to the longitudinal axis. The distribution outlet includes an outlet opening having a width, along the transverse axis, and a height, along a vertical axis mutually perpendicular to the longitudinal axis and the transverse axis.

The profiling mechanism includes a profiling member in contacting relationship with the distribution conduit. The profiling member is movable over a range of travel such that the profiling member is in a range of positions over which the profiling member is in increasing compressive engagement with a portion of the distribution conduit adjacent the distribution outlet to vary the shape and/or size of the outlet opening.